

**A NEW SPECIES OF *ZEALEUCTRA* RICKER (PLECOPTERA: LEUCTRIDAE)
AND CONFIRMATION OF *HYDROPERLA FUGITANS* (NEEDHAM AND
CLAASSEN) (PLECOPTERA: PERLODIDAE) FROM TEXAS**

BORIS C. KONDRATIEFF AND ROBERT E. ZUellig

(BCK) Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523, U.S.A. (e-mail: Boris.Kondratieff@colostate.edu); (REZ) Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523, U.S.A. (e-mail: rez@cnr.colostate.edu)

Abstract.—A new species of stonefly, *Zealeuctra stewarti*, is described from Real Co. and Bandera Co., Texas, U.S.A. The male of *Z. stewarti* is distinguished from all other species by a single, long, slender curved epiproctal spine. We also confirm the occurrence of *Hydroperla fugitans* (Needham and Claassen) from Texas.

Key Words: U.S.A., Texas, stonefly, Leuctridae, Perlodidae, *Zealeuctra*, *Hydroperla*

Currently, eight species of the Nearctic genus *Zealeuctra* Ricker are known from the central United States ranging from Wisconsin to Texas and east to West Virginia (Stark 2001). Adults of this genus emerge from October to April (Ricker and Ross 1969, Stark and Stewart 1973, Poulton and Stewart 1991) and are often associated with low order intermittent streams. Szczytko and Stewart (1977) reported three species of *Zealeuctra* from Texas, *Z. arnoldi* Ricker and Ross, *Z. claasseni* (Frison), and *Z. hitei* Ricker and Ross. Both *Z. arnoldi* and *Z. hitei* are considered endemic to the Edwards Plateau and surrounding areas west of the Blackland Prairie of Texas. A collection of stoneflies submitted to the authors for identification from Texas A&M University included an additional species from Real County. Additional material was recently collected by the authors. The description follows the style of Stark and Stewart (1973).

***Zealeuctra stewarti* Kondratieff and
Zuellig, new species**

(Figs. 1–3)

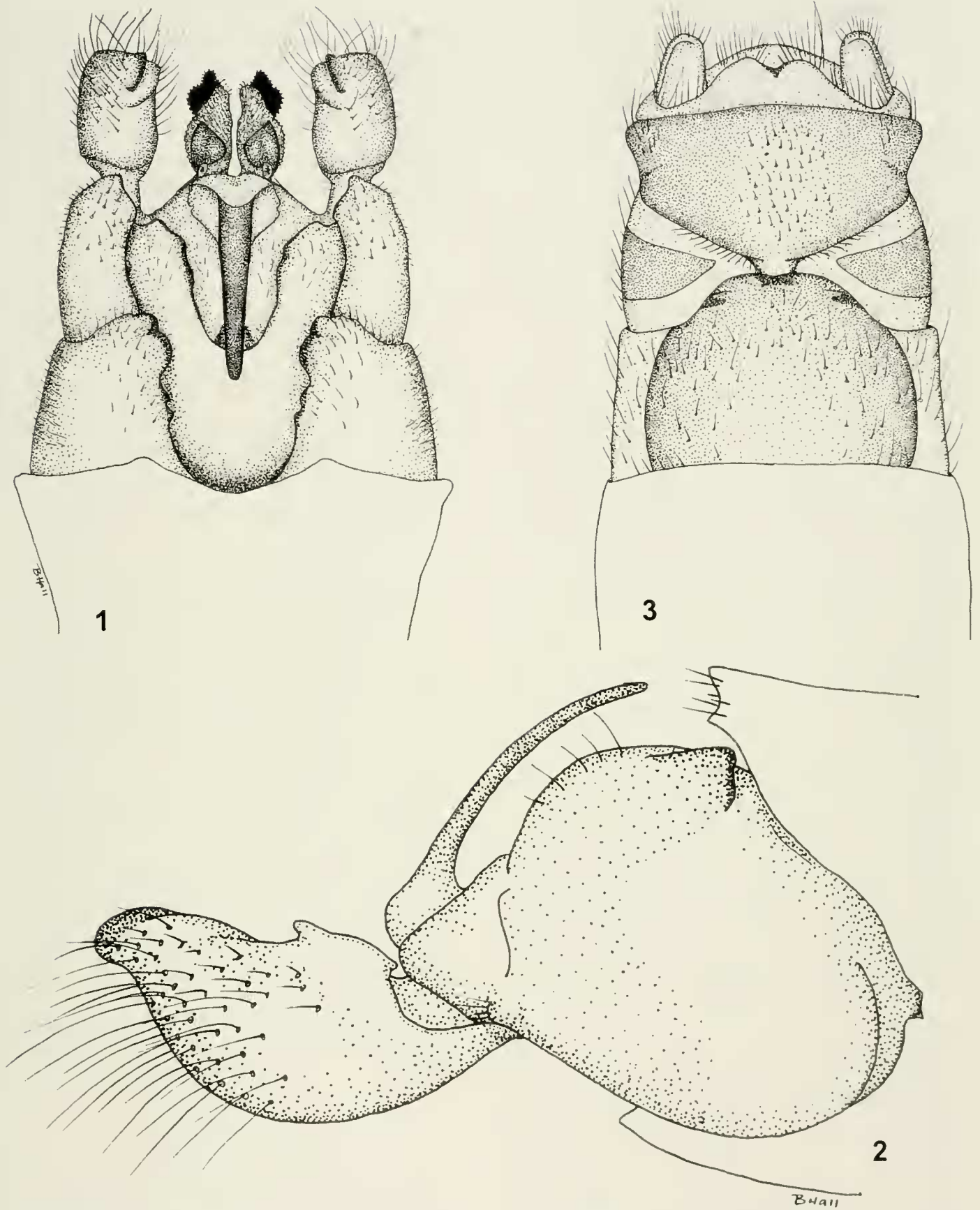
Male.—Forewing length 7.0–7.2 mm; body length 5.0–5.5 mm. General body col-

or brown. Cleft of ninth tergum sclerotized around margins with posterior small rounded teeth, broadly U-shaped anteriorly (Fig. 1). Epiproct with a single, long, slender, curved spine (Figs. 1 and 2). Cerci sclerotized, with an apical dorsal inner lobe and a dorsal ridge, ventral margin with long hairs (Fig. 2). Length of vesicle 1.5× width.

Female.—Forewing length 8.0–8.5 mm; body length 7.0–7.5 mm. Sternum 7 produced and strongly sclerotized at posterior margin and slightly notched (Fig. 3).

Nymph.—Unknown.

Types.—Holotype ♂, and 1 ♂ and 2 ♀ paratypes, TEXAS, Real County, 5.2 mi east of Leakey, April 14, 1985, J. C. Schaffner; Bandera Co., Elam Creek, Farm Road 337 East of Tuff, 511 m, N29°46'58" W099°22'58", 3 April 2004, B. Kondratieff and R. Zuellig, 1 ♂ (CSUC); Real Co., Little Dry Frio, Farm Road 337, East of Leakey, 545 m, N29°43'17" W099°40'26", 4 ♂, 6 ♀ (CSCU, BYUC, USNM). The holotype is deposited in the Texas A&M University insect collection. Paratypes are deposited in the C. P. Gillette Museum of Arthropod Diversity, Colorado State University (CSUC), Monte L. Bean Life Science Museum,



Figs. 1-3. *Zealeuctra stewarti*. 1, Male terminalia, dorsal. 2, Male terminalia, lateral. 3, Female terminalia, ventral.

Brigham Young University, Provo, Utah (BYUC), and the National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM). The stream was not indicated on the collection label of the holotype, but the type locality is the Little Dry Frio.

Etymology.—The patronym honors Dr. Kenneth W. Stewart, University of North Texas, for his numerous substantial contributions to Plecopterozoology and his studies of Texas aquatic insects.

Diagnosis.—The male of *Z. stewarti* can be easily distinguished from all other species of *Zealeuctra* by the single long, slender, and gently curved spine of the epiproct (Figs. 1–2). The U-shaped cleft of the 9th tergum is similar to *Z. arnoldi*, *Z. fraxina* Ricker and Ross, and *Z. warreni* Ricker and Ross, but males of these species have an epiproct with two spines or a small cusp. Males of *Z. cherokee* Stark and Stewart and *Z. wachita* Ricker and Ross, also have the 9th tergum with a U-shaped cleft, but the epiproctal spine is short and thick in both species (Stark and Stewart 1973, fig. 2; Poulton and Stewart 1991, fig. 121). The male of *Z. stewarti* appears to be most similar in the structure of the epiproct and cerci to *Z. wachita*, a species originally described from a single female by Ricker and Ross (1969) from Polk Co., Arkansas. In 1991, Poulton and Stewart associated the male of *Z. wachita* with the female and provided a description. This species is a regional endemic to the Ouachita Mountains of Arkansas (Poulton and Stewart 1991). Among the three other reported Texas species, males of *Z. stewarti* are most similar in general habitus to *Z. arnoldi*, but are easily distinguished by the single long, slender, and gently curved epiproctal spine. The produced 7th sternum of the female of *Z. stewarti* appears similar to *Z. warreni*, but the slight medial notch of the 7th sternum (Fig. 3) distinguishes the former species.

Remarks.—The type locality, Little Dry Frio and Elam Creek, is located within the southern reaches of the Edwards Plateau of

Texas. A survey of the Little Dry Frio and surrounding streams by the authors seems to indicate that this species may be restricted to a small area of the Texas Hill Country in Real and Bandera counties. Only *Z. arnoldi* occurred in other streams in the surrounding Bandera, Kerr, and Uvalde counties.

Confirmation of *Hydroperla fugitans* (Needham and Claassen) from Texas

Szczytko and Stewart (1977) indicated that the only specimen of *Hydroperla fugitans* (Needham and Claassen) known from Texas, the holotype, apparently collected from Austin (Travis Co.) was lost. In 1998, a population of *H. fugitans* was discovered at the Canadian River north of Amarillo, Texas. Much of the river in this region becomes dry or intermittent during summer and fall. The substrate is mostly shifting red sand at the Tascosa site, with a sparse riparian zone of tamarisk and cottonwood. On every visit listed below, the river was running red, with water depth 20–30 cm deep in riffle areas.

Material examined.—Texas: Oldham Co., Canadian River, U.S. 385, Tascosa, (N35°31'15" W102°15'38") 2 ♂, 2 ♀, 21 April 1998, B. Kondratieff and D. A. Leatherman; same but 18 April 1999, B. Kondratieff and S. Wells, 1 ♂, 1 ♀ (CSUC); same but, reared, collected 14 March 2004, emerging 29 March–4 April 2004, B. Kondratieff and R. Zuellig, 6 ♂, 6 ♀ (BYUC, CSUC).

ACKNOWLEDGMENTS

We thank Dr. Bill P. Stark, Clinton, Mississippi for reviewing the manuscript, and Dr. E. G. Riley, Department of Entomology, Texas A&M University is thanked for making specimens available for study. Dr. R. Edward DeWalt, Illinois Natural History Survey provided helpful comments that improved the manuscript. Bobbi Hall is thanked for the artwork.

LITERATURE CITED

- Poulton, B. C. and K. W. Stewart. 1991. The stoneflies of the Ozark and Ouachita Mountains (Plecoptera). *Memoirs of the American Entomological Society*. Number 38, 116 pp.
- Ricker, W. E. and H. H. Ross. 1969. The genus *Zeleuctra* and its position in the family Leuctridae (Plecoptera, Insecta). *Canadian Journal of Zoology* 47: 1113–1127.
- Stark, B. P. 2001. North American stonefly list. www.mc.edu/campus/users/stark/Sfly0102.htm
- Stark, B. P. and K. W. Stewart. 1973. New species and descriptions of stoneflies (Plecoptera) from Oklahoma. *Entomological News* 84: 192–197.
- Szczytko, S. W. and K. W. Stewart. 1977. The stoneflies of Texas. *Transactions of the American Entomological Society* 103: 327–378.